



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JAN 9 1984

NOV 15 1985

*Reasonably expected  
to supply a public water  
supply*

MEMORANDUM

SUBJECT: Guidance for Review and Approval of State  
Underground Injection Control (UIC) Programs and  
Revisions to Approved State Programs.

GWPB Guidance #34

FROM: Victor J. Kimm, Director  
Office of Drinking Water (WH-550)

TO: Water Division Directors  
Regions I - X

PURPOSE

The purpose of this document is to provide guidance to EPA Regional Offices on the revised process for the approval of State primacy applications and the process for approving modifications in delegated programs, including aquifer exemptions.

BACKGROUND

[On January 9, 1984, the Deputy Administrator announced an Agency policy for a State program approval process placing the responsibility on Regional Administrators to recommend UIC program approval to the Administrator and making Regional Administrators clearly responsible for assuring that "good, timely decisions are made." At the same time, we are reaching a point in the UIC program where States are beginning to make revisions to approved programs and we are promulgating amendments to the minimum requirements that the States must adopt within 270 days. We have reviewed the existing approval process and this Guidance spells out the adjustments necessary to comply with the Agency's policy. This new process will take effect on July 5, 1984, and applies to approval of primacy applications and "substantial" program revisions, which are both rulemaking and cannot be delegated by the Administrator under the Safe Drinking Water Act.] This guidance also addresses review and approval of non-substantial program revisions which are the responsibility of the Regional Administrator.

JUL 8 1984

AQUIFER EXEMPTION  
SUMMARY SHEET

Not all  
Ag. Ex. have  
to be reviewed  
by HQ → or  
have a hearing.  
This is a general  
form.. KAT

Date application received in Region: \_\_\_\_\_

Date application sent Headquarters: \_\_\_\_\_

Date action needed: \_\_\_\_\_

APPLICANT: \_\_\_\_\_

HEARING DATE: \_\_\_\_\_

I.D. NUMBER: \_\_\_\_\_

EXEMPTION DESCRIPTION (Township, Range, Section, Quarter section  
and affected area):

FIELD: \_\_\_\_\_

AQUIFER TO BE EXEMPTED: \_\_\_\_\_

JUSTIFICATION FOR EXEMPTION:

- ( ) Aquifer is not a source of drinking water and will not serve  
as a source of drinking water in the future because it:
- ( ) Has a TDS level above 3,000 and not reasonably expected  
to serve as a source of drinking water
  - ( ) Is producing or capable to produce hydrocarbons
  - ( ) Is producing or capable to produce minerals
  - ( ) Is too deep or too remote
  - ( ) Is above Class III area subject to subsidence
  - ( ) Is too contaminated (name contaminant(s)):
  - ( ) Other: \_\_\_\_\_

PURPOSE OF INJECTION: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

APPLICANT: \_\_\_\_\_

HEARING DATE: \_\_\_\_\_

I.D. NUMBER: \_\_\_\_\_

INJECTED FLUID QUALITY: \_\_\_\_\_ INJECTION FLUID SOURCE: \_\_\_\_\_

FORMATION WATER QUALITY: \_\_\_\_\_

OIL OR MINERAL PRODUCTION HISTORY: \_\_\_\_\_

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ACTIVE INJECTION WELLS INJECTING INTO SAME FORMATION

<u>Field</u>	<u>Location</u>	<u>Injection Interval</u>	<u>Injection Source</u>	<u>Total Depth</u>
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WATER USE IN AREA: \_\_\_\_\_

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REMARKS: \_\_\_\_\_

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GUIDELINES FOR REVIEWING  
AQUIFER EXEMPTION REQUESTS

BACKGROUND

The Consolidated Permits Regulations (40 CFR §§146.04 and 144.7) allow EPA, or approved State programs with Environmental Protection Agency (EPA) concurrence, to exempt underground sources of drinking water from protection under certain circumstances. An underground source of drinking water may be exempted if:

1. It does not currently serve as a source of drinking water and;
2. It cannot now and will not in the future serve as a source of drinking water because:
  - (a) It is mineral, hydrocarbon, or geothermal energy producing, or it can be demonstrated by a permit applicant as a part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;
  - (b) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
  - (c) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
  - (d) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or
3. The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

Regulations at 40 CFR §144.7(b)(1) state that "The Director may identify (by narrative description, illustrations, maps or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite all aquifers or parts thereof which the Director preposes to designate as exempted aquifers. . ." If an exemption is proposed under 40 CFR §146.04(b)(1), the applicant for a Class II or III injection well permit must submit information to demonstrate "commercial producibility." To

demonstrate producibility the applicant for a Class III injection well permit may provide a map and general description of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a production timetable. Applicants for an exemption for a Class II injection well may demonstrate producibility by providing information such as logs, core data, drill stem test information, a formation description, and oil data for the well in question or surrounding wells.

Except as listed above, the regulations do not specify technical criteria for the EPA to judge aquifer exemption requests. The EPA therefore developed the following technical criteria. These criteria include general information requirements common to all aquifer exemption requests. These are followed by specific criteria to evaluate each type of exemption request listed above.

EPA will approve aquifer exemptions for only specific purposes. All exemption request approvals will include a description of injection activities allowed and a statement that additional approvals would be needed for other injection activities (e.g., hazardous waste disposal into an aquifer exempted for mineral production).

#### EVALUATION CRITERIA

##### General

Applicants requesting exemptions must provide the following general information:

1. A topographic map of the proposed exempted area. The map must show the boundaries of the area to be exempted. Any map which precisely delineates the proposed exempted area is acceptable.
2. A written description of the proposed exempted aquifer including:
  - (a) Name of formation of aquifer.
  - (b) Subsurface depth or elevation of zone.
  - (c) Vertical confinement from other underground sources of drinking water.
  - (d) Thickness of proposed exempted aquifer.
  - (e) Area of exemption (e.g., acres, square miles, etc.).
  - (f) A water quality analysis of the horizon to be exempted.

In addition to the above descriptive information concerning the aquifer, all exemption requests must demonstrate that the

aquifer "... does not currently serve as a source of drinking water." (40 CFR §146.04(a)). To demonstrate this, the applicant should survey the proposed exempted area to identify any water supply wells which tap the proposed exempted aquifer. The area to be surveyed should cover the exempted zone and a buffer zone outside the exempted area. The buffer zone should extend a minimum of a 1/4 mile from the boundary of the exempted area. Any water supply wells located should be identified on the map showing the proposed exempted area. If no water supply wells would be affected by the exemption, the request should state that a survey was conducted and no water supply wells are located which tap the aquifer to be exempted within the proposed area. If the exemption pertains to only a portion of an aquifer, a demonstration must be made that the waste will remain in the exempted portion. Such a demonstration should consider among other factors, the pressure in the injection zone, the waste volume, injected waste characteristics (i.e., specific gravity, persistence, etc.) in the life of the facility.

#### Specific Information

§146.04(b)(1) It cannot now and will not in the future serve as a source of drinking water because: it is mineral, hydrocarbon, or geothermal energy producing or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

If the proposed exemption is to allow a Class II enhanced oil recovery well or an existing Class III injection well operation to continue, the fact that it has a history of hydrocarbon or mineral production will be sufficient proof that this standard is met. Many times it may be necessary to slightly expand an existing well field to recover minerals or hydrocarbons. In this case, the applicant must show only that the exemption request is for expanding the previously exempted aquifer and state his reasons for believing that there are commercially producible quantities of minerals within the expanded area.

Applicants for aquifer exemptions to allow new in-situ mining must demonstrate that the aquifer is expected to contain commercially producible quantities of minerals. Information to be provided may include: a summary of logging which indicates that commercially producible quantities of minerals are present, a description of the mining method to be used, general information on the mineralogy and geochemistry of the mining zone, and a development timetable. The applicant may also identify nearby projects which produce from the formation proposed for exemption. Many Class III injection well permit applicants may consider much information concerning production potential to be proprietary. As a matter of policy, some States do not allow any information submitted as part of a permit application to be confidential. In those cases where potential production information is not being submitted, it may be necessary for EPA to participate

with the State in discussions with the applicant to obtain sufficient evidence to indicate that the ore zone is commercially producible. The information to be discussed would include the results of any R & D pilot project.

Exemptions relating to any new Class II wells which will be injecting into a producing or previously produced horizon should include the following types of information.

- a. Production history of the well if it is a former production well which is being converted.
- b. Description of any drill stem tests run on the horizon in question. This should include information on the amount of oil and water produced during the test.
- c. Production history of other wells in the vicinity which produce from the horizon in question.
- d. Description of the project, if it is an enhanced recovery operation including the number of wells and their location.

\$145.04(b)(2) It cannot now and will not in the future serve as a source of drinking water because: It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical:

EPA consideration of an aquifer exemption request under this provision would turn on: The availability of alternative supplies, the adequacy of alternatives to meet present and future needs, and a demonstration that there are major costs for treatment and or development associated with the use of the aquifer.

The economic evaluation, submitted by the applicant, should consider the above factors, and these that follow:

1. Distance from the proposed exempted aquifer to public water supplies.
2. Current sources of water supply for potential users of the proposed exempted aquifer.
3. Availability and quality of alternative water supply sources.
4. Analysis of future water supply needs within the general area.
5. Depth of proposed exempted aquifer.
6. Quality of the water in the proposed exempted aquifer.

7. Costs to develop the proposed exempted aquifer as a water supply source including any treatment costs and costs to develop alternative water supplies. This should include costs for well construction, transportation, water treatment, etc., for each source.

§146.04(b)93) It cannot now and will not in the future serve as a source of drinking water because: It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption.

Economic considerations would also weigh heavily in EPA's evaluation of aquifer exemption requests under this section. However, unlike the previous section, the economics involved would be controlled by the cost of technology to render water fit for human consumption. Treatment methods can usually be applied to render water potable. However, costs of that treatment may often be prohibitive either in absolute terms or when compared to cost to develop alternative water supplies.

EPA's evaluation of aquifer exemption request under this section will consider the following information submitted by the applicant:

1. Concentrations and types of contaminants in the aquifer.
2. Source of contamination.
3. Whether the contamination source has been abated.
4. Extent of contaminated area.
5. Probability that the contaminant plume will pass the proposed exempted area.
6. Availability of treatment to remove contaminants from water.
7. Chemical content of proposed injected fluids.
8. Current water supply in the area.
9. Alternative water supplies.
10. Costs to develop current and probable future water supplies, and cost to develop water supply from proposed exempted aquifer. This should include well construction costs, transportation costs, water treatment costs, etc.
11. Projections on future use of the proposed aquifer.



§146.04(b)(4) It cannot now and will not in the future serve as a source of drinking water because: It is located over a Class III mining area subject to subsidence or catastrophic collapse:

An aquifer exemption request under this section should discuss the proposed mining method and why that method necessarily causes subsidence or catastrophic collapse. The possibility that non-exempted underground sources of drinking water would be contaminated due to the collapse should also be addressed in the application.

§146.04(c) The Total Dissolved Solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.\*

An application under this provision must include information about the quality and availability of water from the aquifer proposed for exemption. Also, the exemption request must analyze the potential for public water supply use of the aquifer. This may include: a description of current sources of public water supply in the area, a discussion of the adequacy of current water supply sources to supply future needs, population projections, economy, future technology, and a discussion of other available water supply sources within the area.